KABARAK **UNIVERSITY**

EXAMINATIONS

2008/2009 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT

& INFORMATION TECHNOLOGY

COURSE CODE: BMIT 216

COURSE TITLE: DATABASE MANAGEMENT SYSTEMS

STREAM: Y2S1

DAY: **FRIDAY**

TIME: 9.00 – 11.00 A.M.

DATE: 07/08/2009

INSTRUCTIONS:

1. This question paper has five questions
2. Answer question one and any other three questions

PLEASE TURN OVER

QUESTION ONE (40 MARKS) COMPULSORY

(a) What is meant by the following terms
- (i) Surrogate key
- (ii) Schema
- (iii) Cardinality
- (iv) Multivalued attribute   (8mks)

(b) Explain the distinction between data security and data integrity   (4mks)

(c) Consider the following HOTEL, ROOM, GUEST and BOOKING relations that resulted from normalization to third Normal Form.

```
HOTEL            ROOM            GUEST           BOOKING
HotelNo          RoomNo          GuestNo         HotelNo
HotelName        RoomName        IDNo            GuestNo
Town             Rate            Name            DateFrom
                 HotelNo         Contact         DateTo
                                                 NoOfDaysSpent
```
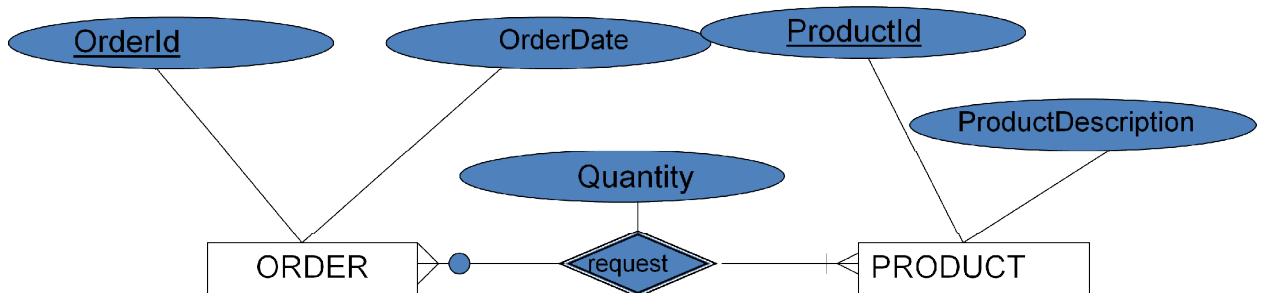
   i.   Identify Primary, foreign and compound keys in the schema   (3mks)
   ii. Explain how business, entity and referential constraints apply in the schema
                                                                               (3mks)
   iii. Write an SQL statement that creates BOOKING table   (4mks)

(d) Give four examples of spatial and temporal GIS data that cannot be captured in a relational data model   (2mks)

(e) Data warehousing comes with a number of benefits. Explain three of these benefits
                                                                               (6mks)
(f) Explain five Date's Rules that a database design must be adhered to for it to be a truly distributed system   (5mks)

(g) Transform the following Entity Relationship model into a relational model   (5mks)

QUESTION TWO (20 MARKS) ELECTIVE

    (a) Explain the difference between flat –based files and databases   (4mks)

    (b) Discuss any four limitations of file based systems that prompted the use database based systems   (4mks)

    (c) What is DBMS?   (2mks)

    (d) As a database expert, you have been invited to talk about DBMS. Part of the speech is to talk about the advantages and disadvantages of a DBMS. Explain then any five advantages and five disadvantages of using DBMS in managing databases that you can include in your speech   (10mks)

QUESTION THREE (20 MARKS) ELECTIVE

    (a) What is SQL   (1mks)
    (b) Explain the two components of SQL   (4mks)
    (c) Below is a sample data for supplied parts database

PARTS

pno	descr	color
P1	Widget	Blue
P2	Widget	Red
P3	Dongle	Green

SUPPLIERS

sno	name	city
S1	Peter	Kisumu
S2	John	Nairobi
S3	Ali	Mombasa

PARTSSUPPLIED

sno	pno	qty
S1	P1	NULL
S2	P1	200
S3	P1	1000
S3	P2	200

Using the information given above,

    (a) write SQL statement that creates PARTSSUPPLIED table using appropriate data types and corresponding data type lengths and includes the following constraint; maximum qty supplied must be 1000   (5mks)

    (b) write SQL statement that displays sno and pno for at least 200 quantities of `items supplied`   (3mks)

    (c) What is the output of the following SQL statement?   (4mks)

```
SELECT partssupplied.*, city
FROM partssupplied, suppliers
WHERE partssupplied.sno=suppliers.sno
```

    (d) List the output that results from the following linear algebra relation   (3mks)

$\Pi_{sno, \, pno}(\alpha_{qty<500}(PARTSSUPPLIED))$

QUESTION FOUR (20 MARKS) ELECTIVE

    (a) What is normalization? (2mks)

    (b) Describe the four steps of normalizing data to third normal form (4mks)

    (c) During research stage a student came across the document below of project allocation table to staff of an organization. Normalize the data to third normal form showing all the steps taken (10mks)

Project Number	Project Title	Staff Number	Staff Name	Staff Grade	Salary Scale	Project Start Date
P214	Stock	1765	John	A	1	20/02/08
		2498	May	A	1	20/02/08
		3912	Carry	C	2	07/07/08
		7833	Davis	B	1	17/12/07
H439	Accounts	6654	Brown	A	1	03/05/08
		1765	John	A	1	22/05/08
		9334	Ivy	D	2	03/05/08
H782	Shopping	3912	Ian	C	2	17/08/07
		7833	Davis	B	1	12/06/07
		0247	Albert	D	1	12/06/07

    (d) Draw an Entity Relationship diagram relating the entities produced from the third Normal Form in (c) above (4mks)

QUESTION FIVE (20 MARKS) ELECTIVE

    (a) List four types of database specialists (2mks)

    (b) Explain four characteristics of an end user of a database system (4mks)

    (c) Explain **three** differences between data administrator and database administrator (6mks)

    (d) One of the functions of a DBA is administration and management of data content. Describe the areas of concern as far as data content administration and management that the DBA carries out. (8mks)